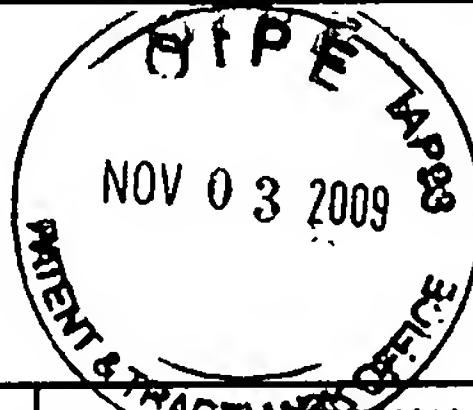






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APPLICATION NO.	FILED DATE	NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/578,327	04/27/2006	Martin Theodoor de Groot	820614-1010	5725
7590	10/20/2009		EXAMINER	
Todd Deveau Thomas Kayden Horstemeyer Suite 1750 100 Galleria Parkway Atlanta, GA 30339			DYE, ROBERT C	
			ART UNIT	PAPER NUMBER
			1791	
			MAIL DATE	DELIVERY MODE
			10/20/2009	PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.



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<b>Office Action Summary</b>	Application No.	Applicant(s)
	10/578,327	DE GROOT, MARTIN THEODOOR
	Examiner	Art Unit
	ROBERT DYE	1791

– The MAILING DATE of this communication appears on the cover sheet with the correspondence address –  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

1) Responsive to communication(s) filed on 05 May 2009.  
 2a) This action is FINAL.                            2b) This action is non-final.  
 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

4) Claim(s) 1,2,4-6,8-10 and 12-14 is/are pending in the application.  
 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.  
 5) Claim(s) \_\_\_\_\_ is/are allowed.  
 6) Claim(s) \_\_\_\_\_ is/are rejected.  
 7) Claim(s) \_\_\_\_\_ is/are objected to.  
 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

9) The specification is objected to by the Examiner.  
 10) The drawing(s) filed on 27 April 2006 is/are: a) accepted or b) objected to by the Examiner.  
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
 a) All    b) Some \* c) None of:  
 1. Certified copies of the priority documents have been received.  
 2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
 \* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

1) Notice of References Cited (PTO-892)  
 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)  
 3) Information Disclosure Statement(s) (PTO/SB/08)  
 Paper No(s)/Mail Date \_\_\_\_\_

4) Interview Summary (PTO-413)  
 Paper No(s)/Mail Date. \_\_\_\_\_  
 5) Notice of Informal Patent Application  
 6) Other: \_\_\_\_\_

**DETAILED ACTION**

1. This is a Final Office action in response to Applicant's reply, dated 5/05/2009, to a Non-Final Office Action. Claims 1, 2, 4-6, 8-10, 12-14.

***Claim Objections***

2. Claim 1 is objected to because of the following informalities: line 10, "fiber-reinforced" is misspelled, should be --fiber-reinforced--. Appropriate correction is required.

***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

5. Claim 1, rejected under 35 U.S.C. 103(a) as being unpatentable over van Dreumel (USP 5,536,344, of record) in view of DE20105550 (of record, with English machine translation) and Spengler (USP 6,287,678).

6. Regarding claim 1, 2, 4, 5, 8, 9, 10 and 12 van Dreumel teaches a method of arranging a thermoplastic insert unit comprising a body and flange having a larger cross-section than the body in a thermoplastic sandwich product having a substantially planar section comprising a core material and fiber-reinforced thermoplastic skin (col 3, line 7). The method comprises forming a hole having a cross-section smaller than the flange (abstract), placing the thermoplastic insert unit into the hole, applying frictional heat and pressure to the insert such that insert and skin panels are fused together, and allowing the weld to set before removing the tooling (col 4, lines 1-13).

7. Van Dreumel does not teach a method wherein ultrasonic welding is employed to fuse the insert and panel. In the same field of endeavor of attaching plastic inserts to a plastic panel, DE20105550 (hereinafter '550) discloses a method wherein a flanged plastic 12a insert is ultrasonically welded to a plastic panel 6 by placing the insert between a horn (sonotrode 2) and an anvil (rest 4) and applying ultrasonic energy and pressure (abstract). Ultrasonic welding relies upon the ultrasonic vibrations to create heat between the two plastic parts due to the friction of vibration. This heat in turn welds the two plastic parts together. This relies upon a similar concept as van Dreumel which also generates heat by the friction caused by the rotation of the insert against the panel. It would have been obvious to one of ordinary skill in the art at the time of the invention to use the ultrasonic welding of '550 in the method taught by van Dreumel because one

of ordinary skill in the art would have been able to carry out such a substitution to achieve the predictable result of welding the insert to the panel. "The combination of familiar elements according to known methods is likely to be obvious when it does no more than yield predictable results." *KSR Int'l Co. v. Teleflex Inc.*, 127 S.Ct. 1727, 82 USPQ2d 1385 (2007).

8. The combination of van Dreumel and '550 still does not teach a panel wherein the core is made from thermoplastic foam. Van Dreumel discloses the sandwich panel as comprising resin sheets bonded to a core, for example, thin metal ribbing (col 3, lines 4). Van Dreumel does not limit the core material to metal honeycombs and sandwich panels comprising a core of thermoplastic foam are well known in the art as evidenced by Spengler which discloses a composite structural panel having a thermoplastic foam core between two fiber-reinforced skins (abstract) Spengler teaches the foam core coupled with the skin provides high strength, rigidity and high strength to weight ratio. It would have been obvious to a person having ordinary skill in the art at the time of the invention to employ a foam core, since it has been held to be within the ordinary skill of a worker in the art to select a known material on the basis of its suitability for the intended use. One would have been motivated to use a foam core for its high strength to weight ratio.

9. Regarding claim 2, van Dreumel teaches a panel comprising two fiber-reinforced skins about a core (col 3, lines 5-7). Although van Dreumel does not expressly teach a foam core, the use of a foam core is known in the art and it would be obvious to employ

such a foam core for reasons noted above (Spengler discloses a thermoplastic foam core within two fiber-reinforced skins, which provides a high strength panel).

10. Regarding claim 4, van Dreumel teaches that a hole is cut into the panel of a size to receive the body of an insert unit (col 1, lines 55-57, see Fig. 2-4).

11. Regarding claim 5, van Dreumel teaches that ideally, the dimension of the thickness of the panel is matched with the height of the insert to permit thermal welding of the insert to the bottom skin (col 3, lines 30-34).

12. Regarding claim 8, van Dreumel teaches that a hole (recess) is cut into the panel before the insert is placed (col 1, lines 55-57).

13. Regarding claim 9, cutting a recess into the panel is considered to deform the panel in some form. Drilling would impose deformation stresses on the material being removed.

14. Regarding claim 10, the limitation reciting the use of an additional fiber-reinforced thermoplastic layer is broad. The examiner wishes to point out that the independent claim only requires one thermoplastic skin layer be present. A sandwich panel described by the above combination has two skin layers. The top skin layer can be recessed while the bottom skin layer can be considered as the "additional fiber reinforced layer" which does provide reinforcement for the recess in the top layer.

15. Regarding claim 12, van Dreumel teaches that when the weld is set (thus cooled), the tooling is removed (tooling applies the pressure). Thus, the weld is cooled under pressure. Further, it would have been obvious to a person having ordinary skill in

the art to ensure that the weld is fully set before allowing movement of the insert; otherwise a misaligned weld could be expected to result.

16. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over van Dreumel (USP 5,536,344, of record) in view of DE20105550 (of record, with English machine translation) and Spengler (USP 6,287,678) as applied to claim 5 above, and further in view of Gorski (USP 4,265,688, of record).

17. Regarding claim 13, the combination does not teach a method wherein less than 90% of the material is removed. In the same field of endeavor of attaching inserts to sandwich panels, Gorski teaches a method wherein a depression is made in a sandwich panel by using an ultrasonic tool (panel is noted as having a honeycomb core but said core is filled with thermoplastic foam) (col 4, lines 11-37). After forming said depression, a flanged insert is ultrasonically welded into the panel. Gorski teaches that the depression can be formed in a single working step and can provide a depression without rotational symmetry when thermoplastic foam is employed at the insert location (col 4, line 19). It would be expected that the melting of the foam via an ultrasonic tool would result in considerably less material, less than 90%, being removed. It would have been obvious to a person having ordinary skill in the art to employ the ultrasonic tool to form a depression as taught by Gorski in the method of van Dreumel (combined) for the purpose of forming a non-rotationally symmetric depression in a single step.

***Allowable Subject Matter***

18. Claims 6 and 14 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

19. The following is a statement of reasons for the indication of allowable subject matter:

20. Regarding claim 6, the prior art of record discloses methods for forming holes in a composite panel but does not teach a method wherein the location is notched, a hole is formed in the thermoplastic foam, and the covering layer is folded into the hole. Van Dreumel teaches that a hole is cut via drill but does not teach or suggest notching the layer and then folding the skin layer into the hole.

21. Regarding claim 14, the prior art of record discloses methods for forming holes in a composite panel but does not teach a deformation method employing a deformation and consolidation stamp. The prior art teaches forming holes via drill (van Dreumel) and ultrasonic tool (Gorski) but does not teach or suggest using a deformation/consolidation stamp sequence as claimed.

***Response to Arguments***

22. Applicant's arguments with respect to claim 1 and 10 have been considered but are moot in view of the new ground(s) of rejection as necessitated by the amended claim language.

23. Regarding the arguments in response to the previous rejection by Rinse and supposed lack of foam core, the examiner wishes to point out that Rinse does in fact teach that "the invention relates to a method of securing a thermoplastic insert in a structural sandwich panel which panel has two outer skins from thermoplastic material and an intermediate layer of foam or honeycomb material" (col 1, line 10-12). Thus, Rinse does teach that foam can be used as a core material. The examiner also reiterates that thermoplastic foam is well known in the art a core material as evidenced by the express teaching by Spengler.

24. Additionally, the application of pressure during ultrasonic welding is intrinsic as the method requires that the two parts be pressed together to facilitate welding (Rinse also expressly states this; col 4, line 31).

25. Regarding arguments on claim 10, the previous claim language did not state an additional layer, only that a reinforcing layer be present (the original sandwich skin was present in the recess of the applied rejection). A new ground of rejection in view of the amended claim language has been applied.

### ***Conclusion***

26. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ROBERT DYE whose telephone number is (571)270-7059. The examiner can normally be reached on Monday to Friday 8:00AM to 5:00 PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Joseph S. Del Sole can be reached on (571)272-1130. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/RCD/

/Joseph S. Del Sole/  
Supervisory Patent Examiner, Art Unit 1791

<b>Notice of References Cited</b>		Application/Control No.	Applicant(s)/Patent Under Reexamination DE GROOT, MARTIN THEODOOR	
		10/578,327	Examiner ROBERT DYE	Art Unit 1791      Page 1 of 1

**U.S. PATENT DOCUMENTS**

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	Classification
*	A	US-6,287,678	09-2001	Spengler, Ernst	428/297.4
	B	US-			
	C	US-			
	D	US-			
	E	US-			
	F	US-			
	G	US-			
	H	US-			
	I	US-			
	J	US-			
	K	US-			
	L	US-			
	M	US-			

**FOREIGN PATENT DOCUMENTS**

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Country	Name	Classification
	N					
	O					
	P					
	Q					
	R					
	S					
	T					

**NON-PATENT DOCUMENTS**

*		Include as applicable: Author, Title Date, Publisher, Edition or Volume, Pertinent Pages)
	U	English machine translation of DE20105550 (08/16/01, of record)
	V	
	W	
	X	

\*A copy of this reference is not being furnished with this Office action. (See MPEP § 707.05(a).)  
Dates in MM-YYYY format are publication dates. Classifications may be US or foreign.

**DERWENT-ACC-NO:** 2001-590990

**DERWENT-WEEK:** 200167

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**TITLE:** Sonotrode assembly welding plastic part simultaneously to packing- and plastic layers, has stepped welding surfaces separated by annular groove

**PATENT-ASSIGNEE:** BRANSON ULTRASCHALL NIEDERLASS [BRANN]

**PRIORITY-DATA:** 2001DE-2005550 (March 29, 2001)

**PATENT-FAMILY:**

<b>PUB-NO</b>	<b>PUB-DATE</b>	<b>LANGUAGE</b>
DE 20105550 U1	August 16, 2001	DE

**INT-CL-CURRENT:**

<b>TYPE</b>	<b>IPC DATE</b>
CIPS	B29C65/08 20060101
CIPS	B29C65/78 20060101

**ABSTRACTED-PUB-NO:** DE 20105550 U1

**BASIC-ABSTRACT:**

NOVELTY - Sonotrode underside welding surfaces are offset and oppose a rest. Surfaces and rest are

pressed sufficiently firmly together to weld the intervening components. During welding, one surface touches part of the plastic component in contact with the plastic layer. The other touches part of the component in contact with the packing layer. The surfaces in contact, are welded simultaneously.

**DESCRIPTION - Preferred Features:** The inner surface (12a) touches the plastic component through a hole (9) of the packing layer (8). The surfaces are separated by an annular groove (14) of the sonotrode. The inner surface projects beyond the outer, to a degree corresponding with the shape of the plastic component. The rest (4), comprises separate parts (4a, 4b) lying opposite the surfaces (12a, 12b). The rest can be moved against the sonotrode, to exert given pressure. The sonotrode includes a bore (16) in its welding surface (12), used to hold the plastic part by means of a reduction in pressure. The sonotrode has a tapped bore (18) at the remote end, fastening and coupling it directly to an ultrasonic transducer.

**USE -** To fix a plastic component to packing- and plastic layers. In a particular example, a drinks pack is described, to which a pouring device is attached.

**ADVANTAGE -** Low cost equipment achieves simultaneous welding of the plastic component with both the packing layer and the plastic layer. This takes place efficiently, despite differences between the two materials of the pack. Only one sonotrode and rest are required. Manufacture is simplified, avoiding a two-stage process.

DESCRIPTION OF DRAWING(S) - The cross section is taken at the moment of welding initiation.

sonotrode (2)

rest (4)

separate parts (4a, 4b)

intervening components (6, 8, 10)

packing layer (8)

hole (9)

welding surfaces (12a, 12b)

annular groove (14)

bore (16)

tapped bore (18)

**CHOSEN-DRAWING:** Dwg.1/1

**TITLE-TERMS:** SONOTRODE ASSEMBLE WELD PLASTIC  
PART SIMULTANEOUS PACK LAYER STEP  
SURFACE SEPARATE ANNULAR GROOVE

**DERWENT-CLASS:** A32 A92

**CPI-CODES:** A11-C01A1; A12-P01;

**ENHANCED-POLYMER-INDEXING:** Polymer Index [1.1]  
018 ; P0000;

Polymer Index [1.2]  
018 ; ND05; J9999  
J2915\*R; K9416; K9938;  
N9999 N6166; Q9999  
Q8399\*R Q8366;

**SECONDARY-ACC-NO:**

**CPI Secondary Accession Numbers:** 2001-175448



Description of DE20105550U

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## Result Page

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<Desc/Cims PAGE NUMBER 1>

### Description

The present invention concerns a Sonotrodenanordnung for an ultrasonic producer for welding a plastic part with a packaging material situation and a plastic situation arranged under it, in particular for welding a thermoplastic plastic part with a cardboard packing and with a thermoplastic sheet.

Cardboard packing for beverages becomes into a racking plant filled and sealed by ultrasonic welding. To the easier beverage withdrawal a Ausglessers is in mould of a plastic part at the package fixed. The connection of the Ausglessers with the package made in a clocked method by means of ultrasound. The connecting process becomes by a first weld of the Ausglessers with the cardboard and realized by a second spaced weld of the Ausglessers with a film. For this a Sonotrodenanordnung with lying one behind the other sonotrodes and the sonotrodes is opposite receptacles provided, in order to accomplish the two welds successively.

As application example juice packing with reclosable Ausglessern is mentioned, which become positioned over a prefabricated hole in the package and subsequent welded by ultrasound becomes.

The present invention is the basis the object to create a Sonotrodenanordnung those with reduced machine effort a simultaneous weld of the plastic part with the packaging material situation and the plastic part with the plastic situation of possible.

The solution according to invention of the object is in claim 1 defined.

With formed the according to invention Sonotrodenanordnung is the weld face into at least two spaced ranges divided. Range typically the range in the center weldingsurface-convenient thereby on a range of the plastic part up, the direct contact to the plastic situation possesses, while another range of the weld face on a range of the plastic part rests upon, the direct contact to the packaging material situation has. By the applied contact pressure between sonotrode and receptacle now a part of the oscillation energy can into the respective regions of the intermediate parts transferred

<Desc/Cims PAGE NUMBER 2>

### EMI2.1

By the measures according to invention the Sonotrodenanordnung becomes significant simplified, since only a sonotrode with a receptacle is required.

In addition also the manufacturing method becomes simplified, since is required instead of a two-stage welding process an only single-step welding process, in order to connect the plastic part with both layers.

Advantageous embodiments and developments of the invention are in Unteransprüche the defined.

On the basis the accompanying drawing, which in a single fig a section by formed a according to invention Sonotrodenanordnung shows, an embodiment of the invention becomes more near explained.

The Sonotrodenanordnung, which consists of a sonotrode 2 and a receptacle 4 arranged under it, represented in the drawing, serves a packaging material situation of 8 for simultaneous connecting of a plastic part 12 both with a plastic situation 6 as well as. In the represented embodiment the plastic part 12 is a preformed Ausglessers for a juice packing, while the plastic situation of 6 and the packaging material situation of 8 are the plastic film and cardboard situation of the juice packing. The plastic part 10 has the preformed shape represented in the drawing, it is possible that a recessed portion rests upon plastic part 10 by an hole 9 of the packaging material situation of 8 the plastic situation 6 immediate through, while a raised outer region of the plastic part 10 immediate the packaging material situation 8 rests upon.

The sonotrode 2 has a weld face 12, which is by an annular groove 14 into an inner region 12a and spaced a for this outer region 12b divided at its underside. The inner region 12a and the annular outer region 12b of the weld face 12 have the plastic part 10 a corresponding mould, whereby the inner region 12a for example a round, oval or also rectangular shape to have can.

The sonotrode 2 and the receptacle 4 are relative to each other more displaceable, in order to exercise a predetermined contact pressure on the parts located between sonotrode and receptacle. In the represented embodiment is the receptacle

<Desc/Cims PAGE NUMBER 3>

4 into two from each other separate regions divided, into an inner region 4a, which faces the inner region 12a of the weld

face 12, and an outer region 4b, which faces the outer region 12b of the weld face 12. Those from each other separate regions 4a and 4b of the receptacle 4 are relative to each other more movable, in order to be able to adjust the contact pressure between sonotrode 2 and receptacle 4 the corresponding specific requirements for the inner and outer region <sup>top</sup> different.

The sonotrode 2 is provided with a bore 16, who is more connectable with a vacuum pump (not shown), in order to subject the bore 16 with vacuum and to hold thus the plastic part 10 at the weld face 12.

At the face 20 remote of the weld face 12 the sonotrode 2 provided with a threaded bore 18 is, which serves for the receptacle of a threaded bolt (not shown), in order to connect the sonotrode immediate or by a piece of amplifier (not shown) for the variation of ultrasonic deflection with an ultrasonic producer (not shown).

The operation of the described Sonotrodenanordnung is as follows: Accomplishing a welding operation the sonotrode, which has for example a length of 90 mm, becomes with an ultrasonic frequency of z. B. 30 kHz operated, so that in longitudinal direction of the sonotrode 2 a half wave can be formed. During the welding operation, like already, the sonotrode and the receptacle 4 with a predetermined contact pressure against each other pressed are mentioned. The contact pressure can become by a movement of the sonotrode 2 and/or the receptacle 4 achieved. The absorption of the simultaneous material-conclusive weld between the plastic part 10 and the plastic situation of 6 and between the plastic part 10 and the packaging material situation 8 effected by the sonotrode 2 into the composite from plastic part 10, packaging material situation of 8 and plastic situation of 6 (Ausglessen, plastic film and cardboard) introduced oscillation energy.

Like likewise already mentioned, b the quality of the spaced welds independently affected can become due to the division of the receptacle 4 into separate regions 4a. An optimization of methods is possible thereby by different pressing times and/or by different contact pressures.